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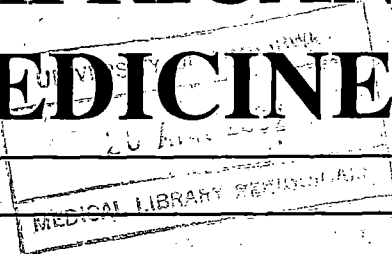
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THE CENTRAL AFRICAN JOURNAL OF MEDICINE

ORIGINAL ARTICLES



Developing a computer database for registering and monitoring patients on chronic drug therapy to determine drug consumption: a pilot study

CB TSOTO, CC MAPONGA, D GWATA

Abstract

Objectives: To develop a computerised database for monitoring actual drug consumption by a group of patients on chronic drug therapy and pilot the database to assess its effectiveness.

Setting: Community based in Chitungwiza, Zimbabwe.

Subjects: 434 patients with asthma, hypertension, epilepsy, *Diabetes mellitus* or multiple conditions whose medical information was entered into the database.

Main Outcome Measure: Accessibility of information on the exact amount of drugs being utilised by patients.

Results: It was possible to determine the amount of drugs being consumed by the patients on chronic drug therapy from the database. Additional information on patient demographic data as well as adverse drug reactions could be compiled from that basic data. The database could also be used to follow up patients and record any changes in their treatment regimens and other relevant clinical information.

Conclusion: It is feasible to create a database for monitoring actual drug consumption by patients on chronic drug therapy as a way of forecasting drug requirements accurately. Such a database has more advantages over the current methods used to estimate drug requirements. It could also be very useful as an information resource centre for nation-wide use.

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Introduction

Zimbabwe has a National Drug Policy whose major goal is to ensure that all Zimbabweans have access to safe, effective and good quality medicines.¹ Challenges to this goal not only include the disproportionately rising cost of drugs, but their shortage as well. This makes it difficult to achieve treatment goals for patients with chronic medical conditions

as they subsequently fail to pay for the drugs, resulting in poor management of their conditions. The situation is further compounded by continuous local currency devaluation, coupled with the country's over-dependence on imported raw materials and finished drug products. Consequently people with chronic conditions such as asthma, cancer, *Diabetes mellitus*, hypertension and rheumatoid arthritis now face the increasing risk of a poor

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quality of life due to complications associated with such conditions.

To ensure both availability and affordability of medicines, policy makers should be reminded to prioritise drug procurement and supply. This calls for precision in estimating the required amounts so that enough medicines are procured in bulk from the cheapest suppliers.² Consequently there is saving of money and improvement in the management of drug supplies, leading to better service. For instance, local manufacturers could be persuaded to produce more accurate quantities of drugs if they knew the market size and required amounts more precisely.

At the moment, statistics on chronic medical conditions are not readily available for use in forecasting drug requirements, though there are four major current methods of estimating drug needs.² These are:

1. The consumption method, which uses records of past consumption of individual drugs (adjusted for stock-outs and projected changes in the drug utilisation) to project future need.
2. The morbidity method, which estimates the need for specific drugs based on the expected number of attendance, the incidence of common diseases, and standard treatment patterns for the diseases considered.
3. The adjusted consumption method, which uses data on disease incidence, drug consumption/utilisation, and/or drug expenditures from a "standard" supply system and extrapolates the consumption or utilisation rates to the target system, based on population coverage or service level to be provided.
4. Service-level projection of budget requirements that use the average drug procurement cost per attendance or bed-day in different types of health facilities in the target system. However, all of these methods have the major drawback of relying on past consumption records that may not always be accurate or available.

This study was conducted specifically to develop a database for registering patients on chronic drug therapy, in order to monitor their drug consumption and find a more accurate (hence effective) method of quantifying drug requirements. Basically it was a "one off" exercise to establish a feasible database from which monitoring/determination of patients' drug consumption is possible at any given time. The same data collection form is used for the actual monitoring of any changes in drug consumption or the onset of any side effects, for a given number of patients.

Materials and Methods

Computer Programme.

The computer database was developed using computer software called Epi Info 6, which is distributed free of charge to public institutions by the Centre for Diseases Control and Prevention (CDC), USA and the World Health

Organisation (WHO).³ This is a word processing, database and statistics programme for analysing questionnaire data as well as organising study designs and results into text.

Data Collection.

A data collection form was designed (see Appendix I), after which six field workers were recruited from the community and trained how to gather information. In the first phase they visited Chitungwiza's four polyclinics (St Mary's, Zengeza, Seke North and Seke South) and Chitungwiza General Hospital, to record details of patients from the patient registers at these institutions. They then visited the patients at their homes to obtain further information hitherto unavailable from the clinic/hospital registers. Only those patients who were present at their homes and also consented to participate, were interviewed. This exercise covered the period 1 January 2000 to 30 April 2001, with all the homes of chronic patients (then) attending Chitungwiza health centres being visited. Data were then entered into the Epi Info 6 computer database and analysed to assess its (database) effectiveness.

Appendix I: Data collection form.

CHRONIC THERAPY PATIENTS' REGISTER

ID NUMBER ENTRY DATE TODAY

PATIENT DETAILS

SURNAME

FIRST NAME(S)

DATE OF BIRTH AGE SEX

WEIGHT (KG) HEIGHT (cm)

RACE NATIONAL ID NUMBER

MARITAL STATUS OCCUPATION

ADDRESS CITY

..... COUNTRY

..... PHONE No

ROUTE OF ADMISSION

HOSPITAL HOSPITAL No.

CONSULTANT/GP PRINCIPAL

HISTORY OF PRESENT ILLNESS

DIAGNOSIS

.....

.....

.....

.....

ALLERGIES

MANAGEMENT

DRUG THERAPY

DRUG DAILY DOSE

.....

.....

.....

.....

Sampling.

It should be noted that the study focused on developing and testing a research aid (database) for storing epidemiological information required for monitoring the drug consumption of a group of chronic patients. As such the "representativeness" of the "sample" lies in the coverage of all chronic conditions found at the health centres rather than in the statistical computation of "minimally acceptable" cases recorded per condition. The thrust was not to analyse distribution of characteristics within a "representative" sample and then extrapolate it to a wider population, but to find out whether it was feasible to install a database that could monitor actual drug consumption of a group of chronic patients. In short, the idea was to test whether the database could generate aggregated rather than individual data (see "Discussion" below) which could be of practical use, e.g. in drug purchasing.

The information gathered included biographical, residential address, weight, height, race, route of admission, diagnosis, allergies and drug therapy.

Results

The total number of patient files generated in the Epi Info 6 database was 434. It was possible to retrieve readily the information on the amount of drugs being used by the patients with chronic medical conditions. The exact

quantities of the drugs were computed from the daily dose frequencies recorded in the database.

In addition to obtaining the amounts of drugs consumed, the database also generated epidemiological information such as the frequency of chronic conditions that affected the patients in Chitungwiza, as shown in Figure I.

According to this study, hypertension accounted for 64% of the cases, followed by type II diabetes (14%), asthma (13%), epilepsy (5%) and type I diabetes (4%). However, since the sample had not been randomly selected this distribution is not statistically valid and so does not reflect the situation at Chitungwiza health centres.

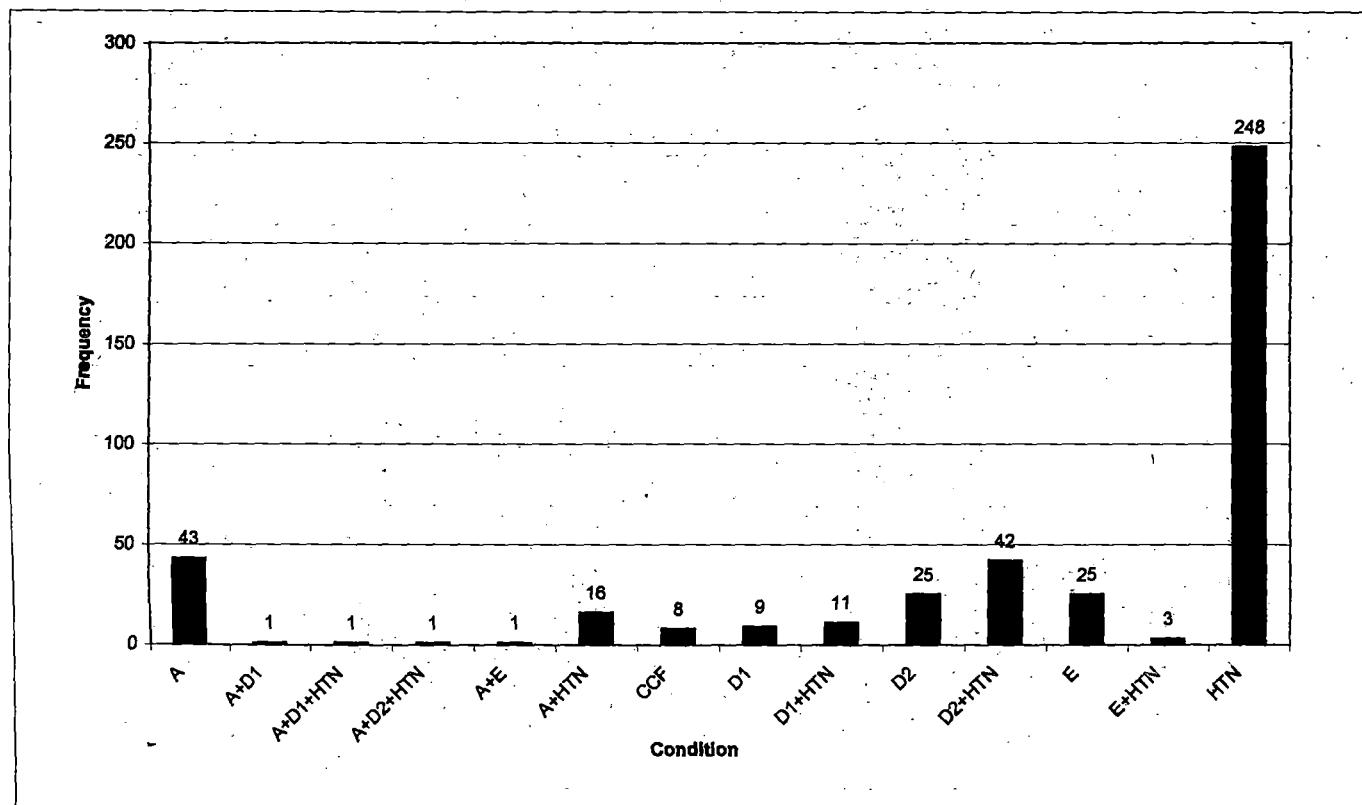
Figure II shows the drugs that were being used by patients with hypertension and the number of patients taking each type of drug. The most frequently used was hydrochlorothiazide (37%), followed by methyldopa (28%), reserpine (9%), frusemide (5%) and potassium chloride (5%).

Figure III shows the medicines being used by diabetic patients, with the frequency of cases for each medicine clearly indicated.

Discussion

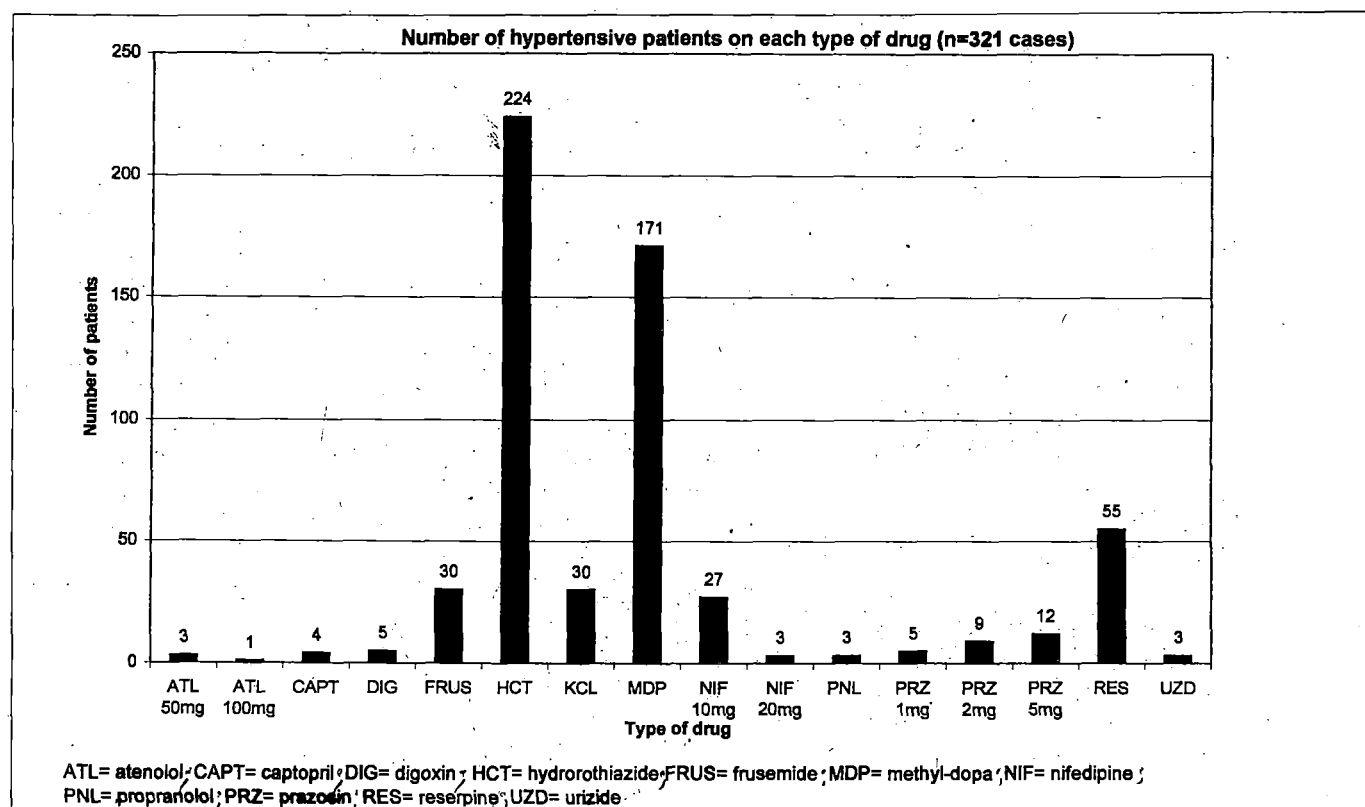
The use of modern computers in the health care system has greatly improved the provision of health services.

Figure I: Chronic condition frequency (n=434 cases).



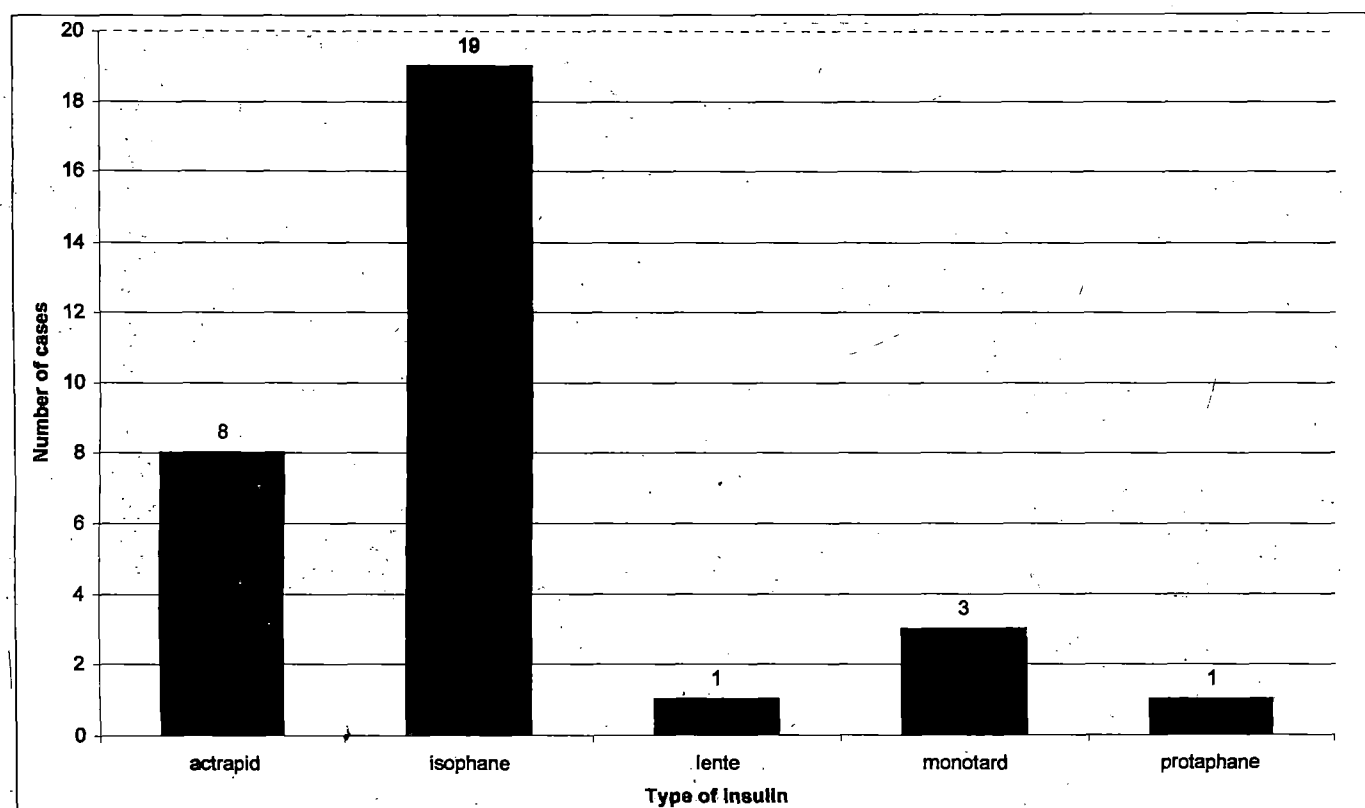
A = asthma; D1 = type 1 diabetes; D2 = type 11 diabetes; E = epilepsy; CCF = chronic cardiac failure; HTN = hypertension.

Figure II: Number of hypertensive patients on each type of drug (n=321 cases).



ATL = atenolol; CAPT = captopril; DIG = digoxin; HCT = hydrochlorothiazide; FRUS = frusemide; MDP = methyl-dopa; NIF = nifedipine; PNL = propranolol; PRZ = prazosin; RES = reserpine; UZD = urazide.

Figure III: Number of type 1 diabetes patients on each type of insulin (n=22 cases).



Numerous studies on developing computer databases for health care delivery have been done in other countries, showing that these databases do improve the health care services quite significantly. For example, a study was carried out in Ravenna (Italy), to develop a computer-assisted system for improving the appropriateness and effectiveness of hypertension treatment in clinical practice, and to install a database for both epidemiological and economical assessments.⁴ The findings confirmed the need for and feasibility of implementing the project in general practice.

In addition, research on the prevention of cardiovascular diseases in general practice also indicated that preventive detection and intervention programmes could be effective. Another study conducted in the Netherlands led to the development of a programme, the Nijmegen Hypertension Monitoring System (NHMS), which was a computer-assisted system of monthly feedback of treatment results and regular meetings of the participating general practitioners. The results showed the system's effectiveness, feasibility and adaptability to other chronic diseases.⁵

At the University of Bristol another study was also done to assess the effect of computers and computer based clinical decision support systems (CDSS) on the management of hypertension. The results demonstrated an improvement in both patient administration and physician performance by using a computer.⁶

These studies demonstrated that the development of centralised health care databases was the key to creating more rational, systematic and cost-effective health care delivery systems.

The Epi Info 6 computer database developed in this study is an innovative method of continuously monitoring drug consumption. This is because it is consumption-based, specific for a disease condition and can be updated on a daily basis to record any changes in drug requirements. Consequently it is likely to produce much more accurate data for drug procurement agencies since it shows current consumption. At a secondary level the same database can also be used to monitor some patient specific responses to drugs, such as the adverse drug reactions in post marketing surveillance.

This data gathering method is not known to have been employed anywhere else before. One study was conducted in Gabon to develop a method of calculating the national drug requirements using the computer.⁷ The advantages of this method were found to be an improvement in the availability of essential drugs at all levels of the health system and a decrease of the required drug budget. However, the study was based on the consumption and morbidity methods. The consumption method does not normally address the appropriateness of past consumption patterns. If stock-outs have been widespread for long periods, it may be impossible to apply this method accurately.² Morbidity-based quantification is the most complex and time-consuming. Morbidity data may not be available for all diseases and standard treatments may not really be used. Adjusted consumption is the method generally used if

neither the consumption-based nor the morbidity method is feasible. However, there is questionable comparability of patient populations, morbidity, and treatment practices. Service-level projection of budget requirements produces a rough estimate of financial needs for drug procurement. It does not estimate quantities of individual drugs. Also, there is variability in facility use, attendance, treatment patterns, and supply system efficiency.

The Epi Info database that was developed in this study is also useful in retrieving the information required to calculate the amount of drugs being used by patients on chronic therapy. Figures II and III illustrate how this information is presented in the database, with the actual quantity of each drug being extrapolated from these figures. The database also generates tables showing the daily doses of each drug being taken by each patient. For example, of the hypertensive patients on record, 213 were taking one hydrochlorothiazide 25mg tablet once daily, 16 were taking two tablets daily and five were taking one tablet twice daily. This amounted to 7 650 tablets, which are required every month by the hypertensive patients in Chitungwiza that were involved in this study.

This method of continuously monitoring the drug consumption of patients on chronic medication ensures a constant supply of drugs, which eases the standardisation of treatment practices through guaranteed availability of the requisite drugs. In addition, prescribers would tend to adhere to standard treatment guidelines since adequate resources would be available, thus eliminating the need to improvise with limited resources.

Limitations of Epi Info Database.

When retrieving data the Epi Info programme has some limitations in obtaining specific information with relative ease. For example, to know which drugs the patients are consuming, the command would be LIST DRUG and all the drugs would be listed. It is not possible to get the details of each individual drug separately.

However, the process of getting specific information from the Epi Info database only requires a few commands and a few easy steps. The Epi Info database can be a very useful information source for epidemiology studies as demonstrated in Figure I. Such information is also useful for teaching and research purposes.

Conclusion

Storing details of patients on a centralised recording system potentially enhances better health care provision through patient-oriented education programmes and follow ups on a group of patients to monitor their progress (e.g. significant drug effects) as well as to check for prescription changes. This project demonstrated that it is feasible for the Epi Info 6 computer programme to create a database for monitoring actual drug consumption by a group of patients on chronic drug therapy, as a way of accurately forecasting drug requirements.

The Epi Info 6 database developed in this study appears to be more precise and accurate than the current methods

for quantifying drug requirements. One of its advantages is that field workers with low level training were able to collect patient data. In addition, computer data entry was basic enough to be taught to junior level workers, making it cost effective for use even in community settings. The computer database can also be a very useful information resource tool, hence it is recommended for implementation on a wider scale so that its advantages can be demonstrated clearly.

References

1. Ministry of Health and Child Welfare. National Drug Policy of Zimbabwe. Ministry of Health and Child Welfare. 1995; 4.
2. Management Sciences for Health, Managing Drug Supply. 2nd ed. Kumarian Press. 1997:10-11.
3. Epi Info 6 is a series of microcomputer programs for handling epidemiological data in questionnaire format and organising study designs and results into text that may form part of written reports. The Epidemiology Program Office, Centres for Disease Control and Prevention (CDC), United States of America, and the Global Program on AIDS, World Health Organisation, Geneva, Switzerland produced it. It is distributed for public health use free of charge.
4. Esposti DE. The Pandora Project: results of the pilot study. *Am J Hypertens* 1999; 12(8 pt 1):790-6.
5. Van den JP, Van Ree JW. Preventive cardiology in general practices: computer assisted health care. *J Hum Hypertens* 1990;4 (4):365-7.
6. Montgomery AA, Faley T. A systematic review of the use of computers in the anagement of hypertension. *J Epidemiolo Comm Health* 1998;52(8):520-5.
7. Bannenberg W, Soeters R. Computerised calculation of essential drug requirements. *Soc Sci Med* 1988;27:955-70.

Orbital exenterations and squamous cell carcinoma of the conjunctiva at Sekuru Kaguvi Eye Unit, Zimbabwe

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Abstract

Objectives: The aim of the audit was to determine the common orbital diseases necessitating orbital exenterations at Sekuru Kaguvi Hospital (SKH) between January and December 1999 and recommend ways of reducing the numbers of procedures done annually.

Design: Retrospective cross sectional study.

Setting: Department of Surgery, Parirenyatwa Hospital, University of Zimbabwe.

Subjects: 23 patients who underwent orbital exenterations at SKH over a one year period.

Main Outcome Measure: The nature of orbital tumours requiring orbital exenteration in Zimbabwe.

Results: A total of 23 patients underwent orbital exenteration during the period under review. Of the 23 patients, 13 (56.5%) had squamous cell carcinoma (SCCA) of the conjunctiva with orbital extensions, 69% of the 13 patients were females and the mean age of these patients was 37.2 years (interquartile range 28, 48).

Conclusions: People in tropical regions, where there is a high risk of squamous cell carcinoma of the conjunctiva in terms of increased predisposition to solar radiation, high prevalence of HIV and inadequate eye care services, should seek medical attention as soon as they notice a persistent conjunctival growth. Conjunctival tumours should be widely excised and material sent for histology to confirm diagnosis and clarity of excision margins. All patients diagnosed as having SCCA of the conjunctiva should be closely monitored to facilitate early detection of recurrences and institute appropriate treatment.

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